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ABSTRACT

The validity of assumptions that portfolios complement other assessment methods and yield more reliable and valid data than do traditional methods was studied. More specifically, focus was on examining whether: achievement level (characterized by scores, ranks, and group membership) varies significantly with differing definitions and usage of portfolios; and progress determined through portfolio assessment differs from progress ascertained using a variety of traditional assessment methods (such as paper and pencil tests, interviews, and cumulative grade point average). Data on 30 college students in teacher education enrolled in three schools of the Alabama Consortium for Minority Teacher Education were collected during the freshman year and at the end of the sophomore year via standardized tests, questionnaires, and portfolios. Portfolios included students' exhibits of milestones reached, activities that they considered enriching to personal, social, and academic development. Data were analyzed using the Pearson correlation, multiple regression, and discriminant analysis techniques. Results show that performance measured using the portfolio technique is related to performance determined using traditional measures such as ACT (American College Test), college grade point average, and essays. However, the nature of that relationship suggests using portfolios as a supplement, rather than as a substitute, to traditional measures. Two tables present study data, and a 28-item list of references is included. (SLD)

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# What Type Of Evidence Is Provided Through Portfolio Assessment Method?

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Paper presented at the Mid-South Educational Research Association Conference, Lexington, Kentucky, November 13-15, 1991

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## ABSTRACT

### "WHAT TYPE OF EVIDENCE IS PROVIDED THROUGH THE PORTFOLIO ASSESSMENT METHOD?"

Two assumptions underlie the use of the portfolio assessment technique. One is that portfolios complement other assessment methods. This is implied when portfolios are used in conjunction with other methods to document learning. Here, portfolios improve the reliability and validity of evidence. The second assumption is that portfolios yield more relevant and valid data than traditional methods. This is evidenced when portfolios are used as an alternative to traditional methods as is sometimes done when evaluating general education or teaching. Which assumption is tenable has never been formally addressed. The current study investigated the validity of these assumptions. Specifically, it sought to find out whether portfolios yield more encompassing evidence than, or tap abilities unrelated to those measured by, conventional methods. It will take more than this study to determine the correct assumption. The current study however, provides a starting point for dialogue in this area.

The sample comprised 30 students in the Alabama Consortium for Minority Teacher Education. Data were collected by using standardized tests, questionnaires and portfolios. The data were analyzed using the pearson correlation, multiple regression and discriminant analysis techniques.

Results showed that performance measured using the portfolio technique is related to performance determined using traditional measures such as ACT, college GPA and essays. However, the nature of that relationship suggests not to use portfolio, defined narrowly to exclude pencil-and-paper tests, as a substitute to traditional measures but rather as a supplement.

The study provided some information on portfolio assessment that may help users determine when best to use this assessment technique.

The Portfolio assessment technique has become very popular in educational evaluation in recent times because of dissatisfaction with, for a variety of reasons, traditional assessment methods. Despite its growing popularity, portfolio assessment remains an enigma in many quarters. Nevertheless, it has been used for many evaluation purposes. Educators and researchers make either explicit or implicit assumptions about the reliability and validity of portfolio assessment method when they use it. The purpose of this paper is to draw attention to these assumptions and to hopefully start a dialogue that will eventually help determine which assumption is more tenable than the other or when each assumption might be tenable. The next section will give a brief overview of the meaning of portfolios and and how they have been used in the literature.

Portfolio, for many researchers (for example Collins, 1990), is a collection of documents assembled over a period of time by an examinee/candidate to provide evidence of his/her competence, knowledge, skills, abilities, and dispositions in relevant fields. Other users, however argue that portfolios are more than containers. Wolf and the TAP staff decided on a definition of portfolio that embraces its function as a depository of artifacts but, more importantly, requires a written reflection by the developer on the significance or contributions of those artifacts to the attributes of interest. Portfolio assessment is, thus, a method of assessment that is used to evaluate one's ability, knowledge base, skills, attitudes and dispositions through portfolio evidence. As with other measurement techniques, effective use of the portfolio assessment requires that each

portfolio be developed to serve a specified purpose. This purpose determines the contents of a portfolio. As Bird (1990) said, if purpose is not specified portfolio becomes a hodgepodge of documents.

Portfolios have been used for various purposes. Their most popular uses seem to be in the assessment of general education outcomes (Black, 1990; Forrest, 1990; O'Brien, 1990; Hunter, 1990); reading and/or writing across the curriculum (Jongsma, 1989; Elbow & Belanoff; (See Table 1 for more examples.)), credits for college-level skills and knowledge gained through work, volunteer activities, independent reading, military or corporate training, and other life experiences (Dagavarian, 1989; Thomson, 1988; Preston, 1981; Wolf, 1989; College of Boca Raton, Universities of Miami and Toledo).

The title of Forrest et al's paper portrays their assumption about portfolio assessment-- Portfolio-assisted assessment of general education (1990). According to these writers, portfolio assessment is one of the most meaningful ways to utilize several assessment approaches in tracking students and assisting student learning. Here portfolio is seen as a conglomerate of various documents some of which may be results on pencil-and-paper tests or classroom observation. Defined this way, the underlying assumption is that judgments based on such a porfolio is more reliable and valid because the evidence is more inclusive and comprehensive.

Portfolio asessment has also been used a great deal in measuring prior learning especially in adult education and alternative certification programs (Knapp & Gardiner, 1981;

Heerman, 1982; Woodrow, 1989; and Thomson, 1988). Most of these situations involved assessing skills and competence through portfolio documentation in lieu of formal assessment. When the portfolio is used this way, the underlying assumption is that the decision made is as reliable and valid as, or even more reliable and valid than, traditional tests which were considered inadequate to capture whatever is being measured.

Similarly, portfolio assessment technique has been used to measure academic progress and/or "value-added" gains (O'Brien, 1990; Nweke, 1990). Portfolios have also provided evidence for evaluating programs (Shaw, 1989; & Slevin, 1989); for advising and motivating students (Mattson-Sonoma, 1989; Mills-Court, 1989), and for preparing a supplement to a resume (Nweke, 1990.)

In addition to the above areas, portofolio assessment has made its debut into teacher assessement (Capie et al, 1979; Bird, 1990; Shulman, 1989; Wolf, 1990). Shulman and his staff at the Teacher Assessment Project (TAP) examined among other things the feasibility of using the portfolio assessment method to document and evaluate the complex art of teaching which they argue cannot and have not been effectively done by existing pencil-and-paper tests and observation methods. Shulman (1988) argues that a complete teacher assessment plan should include evidence from four sources -- pencil-and-paper tests, classroom observation, assessment center exercises, and documentation of performance in the form of portfolios. He contends that relying on any one of these sources is essentially invalid. The TAP staff criticize such tests as the old NTE tests for ignoring the context and requiring one correct response and one best practice from every

teacher (Aburto and Nelson-Barber, 1987). It is their conviction that the portfolio assessment method (and other TAP exercises) will provide teachers "the opportunity to describe and defend their personal teaching and evaluation strategies" (Aburto and Nelson-Barber, 1987). They emphasize, as did Shulman, that portfolios can only be a supplement, not a replacement for, traditional measurement techniques.

Shulman and the TAP staff make an important distinction among performance portfolios, on the one hand, and self-report, essays, test results, and letters of recommendation or recognition written by others, on the other hand. The contents of performance portfolios include what Vavrus and Collins (1988) call artifacts ( e.g teachers' handouts, tests, notes, samples of student' work), reproductions of nonportable and nonpermanent evidence such as pictures of bulletin boards, or blackboards, videotapes of classroom teaching, or an audiotape of planning sessions, and explanations and reflections attached to the entries showing how the documents relate to instruction. This type of portfolio is performance oriented in contrast to some other types of portfolio that contain only self-reports, results of tests and examinations and essays on self-assigned or designated topics.

Whether or not the portfolio can be used as a supplement or a substitute for traditional assessment techniques should depend on how the portfolio is defined and, consequently, the type of evidence included in it. The tenability of the implicit assumptions of the reliability of portfolios thus depends on how comprehensive or inclusive the contents of the portfolio are. A

review of the use of the portfolio in the literature shows that some educators include results of pencil and paper tests and examinations in addition to samples of writings over a period of time (See Table 1). Defined and used this way, portfolios provide multiple sources of evidence for assessment and evaluation and thus can be argued to be conceptually more valid in terms of content or

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Insert Table 1 about here

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behaviors covered, the construct(s) measured and perhaps, relationship to specified criteria. Where portfolios contain essays or projects and exclude results from pencil and paper tests, portfolios may be tapping only a limited set of behaviors, skills and dispositions. This may be valid in the criterion-referenced interpretation sense if the set of behaviors or skills etc is representative of the domain of interest but, perhaps, not as a general measure of level of achievement.

The first focus of this paper is to examine whether achievement level, characterized by scores, ranks or group membership, varies significantly with differing definitions and usage of the portfolio. The second focus is to investigate whether progress determined through portfolio assessment differs from progress ascertained using a variety of traditional assessment methods such as pencil and paper tests, interviews, cumulative grade point average, etc.

Methodology

Sample. The subjects for the study are 30 students, in the

first cohort of Alabama Consortium for Minority Teacher Education (ACMTE), enrolled in teacher education programs in three of the seven institutions that make up the consortium.

Procedure. The ACMTE espouses the value-added philosophy of measurement. Under this orientation, baseline measures were obtained on the students during the freshman year beginning with structured interviews, essays on assigned topics, Learning and Study Skills Inventory (LASSI), high school GPA, ACT or SAT, and numerous demographic data. The essay and interview were rated by at least two judges/raters. The criteria for rating the Alabama English Language Proficiency test (AELPT) were uesd for grading the essays. The interviews were rated according to four criteria. These measures would serve as bases for determining how much 'value' has been 'added' to the student, in other words, how much progress the students have made over any given period of time. Additional multiple measures of students' achievement and progress are obtained in the sophomore year, some through a second administration of earlier-mentioned tests such as ACT, essays and interviews, others from first-time administration of other tests such as the AELPT, and yet other measures are obtained from portfolios, cumulative GPA, and acceptance or rejection decision into professional teacher education programs at the end of sophomore year.

Some of the above measures are obtained from standardized tests and so the scores are directly comparable among the four schools. Grades from interviews, essays and portfolio, though based on the same scoring key, are less comparable because of variability in the graders/raters. We will bear this in mind

while examining any results from the study. Portfolio, for this study (not the the project) excludes traditional measures. Specifically, portfolios included students exhibits of milestones reached, activities participated in that they consider enriching to their social, personal and academic development. In addition, only a selected number of variables mentioned above will be included in the analyses for this paper.

RESULTS AND DISCUSSION

Data were analyzed using a variety of statistical tests. Table 2 shows the intercorrelations among portfolio scores and other measures used in the study. Portfolio performance has its highest correlation (r= 0.504) with essay written at sophomore level despite very low relationship (r = 0.016) with essay written at freshman level. Portfolio performance shows a curious

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Insert Table 2 about here

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and negative relationship with ACT1 (r = - 0.115), ACT2 (r = -0.165) and the second interview (r=-0.206). It appears that portfolio taps something different from what the ACT's and interviews measure though it has quite a lot in common with the essay written after two years in college. The fact that the portfolio score is a measure of progress, and not mere level of achievement, may explain portfolio performance's higher relationship to the second essay, second interview and ACT2, than the first essay, first interview and ACT1 (See Table 2).

Also a multiple regression analysis shows that the best predictors of performance on the portfolio were current college

grade point average (GPA), ACT2, second essay and second interview. These independent variables account for 41.7% of variability in portfolio performance. Similarly, a discriminant analysis was used to verify any variability in group membership. The results show that groupings based on discriminant functions formed by other measures such as performance on the essay written at the sophomore level, interview at the end of sophomore, ACT and cumulative GPA were not very different from groupings based on portfolio performance. Specifically, 73% of the students were classified correctly using the discriminant function, while 27% were misclassified.

CONCLUSION

The results of this study, though tentative, suggest that the portfolio assessment may be quite a useful source of evidence in student assessment. Nevertheless, it also appears that caution needs to be exercised in using it. Specifically, the portfolio, which excludes traditional measures, may not be an adequate replacement for the latter as some authors have done. When defined narrowly (to exclude pencil-and paper tests) the portfolio should be used as a supplement, one of many sources of evidence, but not as a substitute, to traditional testing.

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Table 1 - Summary of Users and Purposes of Portfolio Assessment*

| Purpose | Users | Assumptions |
|---|---|---|
| General Education | 1. Forrest, 1990<br>2. O'Brien, 1990<br>3. Hunter, 1990<br>4. Univ. of the City of New York<br>5. Black, 1990 | Portfolio as supplement to traditional evaluation (Supplement)<br><br>Alternative to portfolio (Substitute) |
| Reading/ or Writing Proficiency | Arzt, St. Joseph College<br>Elbow and Belanof<br>Jongsma, 1989<br>Larson<br>Lord, Plymouth State College<br>Slevin, College of William and Mary<br>Tebo-Messina, Withrop College | Supplement<br><br>Substitute<br><br>?<br>Substitute<br>Supplement<br><br><br>?<br><br>Substitute |
| Credit for non-formal education | 1. Dagavarian, 1989<br>2. Daiker, Miami University<br>3. Preston, 1981<br>4. Ross<br>5. Swift, Univ. of Toledo<br>6. Thomson, 1988<br>7. Wolf, 1989 | Substitute<br>Substitute<br><br><br>Substitute<br>Substitute<br>Mixed<br><br>Substitute<br>Supplement |
| Prior knowledge - Adult education | 1. Heerman, 1982<br>2. Knapp & Gardner, 1981<br>3. Thomson, 1988<br>4. Woodrow, 1989 | Substitute<br>Substitute<br><br>Substitute<br>Substitute |

Table 1 - Continued

| | | |
|---|---|---|
| Teacher Assessment - Performance Portfolio | 1. Aburto & Nelson - Barber, 1987<br>2. Bird, 1990<br>3. Capie et. al., 1979<br>4. Shulman, 1988, 1989<br>5. Wolf, 1990 | Supplement<br>Supplement<br>Supplement<br>Supplement<br>Supplement |
| Resume | 1. Nweke, 1990 Alabama Consortium for Minority Teacher Education (ACMTE) | Supplement |
| Progress: Value-Added Education | 1. Nweke, 1990 (ACMTE) | Supplement |
| Progress: Writing | 1. Rosenberg<br>2. Larson, CUNY | Supplement<br>Substitute |
| Advising & Self-Motivation | 1. Mattson-Sonoma State Univ.<br>2. Mills-Courts, SUNY | ?<br>Supplement |
| Specific field | 1. Scott-Kenyon College | Substitute-Reflection as a historian |
| Program Evaluation | 1. Shaw - Univ. of Virginia<br>2. Slevin - College of William & Mary | Substitute<br>? |
| | | |

* This classification in many cases is based only on secondary sources of information and thus the details available may not have been sufficient to make an accurate classification. If this is the case for any of the users listed in table 1, the author apologizes and will be glad to receive accurate information. A question mark (?) has been used to indicate total absence of information regarding how portfolio is used.

Table 2 Correlation Matrix

| | HSGPA | CGPA | ACT1 | ACT2 | ESS1 | ESS2 | INT1 | INT2 |
|---|---|---|---|---|---|---|---|---|
| CGPA | 0.439 | | | | | | | |
| ACT1 | 0.454 | 0.204 | | | | | | |
| ACT2 | 0.370 | 0.201 | 0.860 | | | | | |
| ESS1 | 0.381 | 0.411 | 0.495 | 0.480 | | | | |
| ESS2 | 0.350 | 0.227 | 0.097 | 0.110 | 0.408 | | | |
| INT1 | 0.530 | 0.414 | 0.279 | 0.227 | 0.096 | 0.373 | | |
| INT2 | 0.349 | 0.216 | 0.401 | 0.359 | 0.329 | 0.273 | 0.498 | |
| PTF | 0.213 | 0.114 | -0.115 | -0.165 | 0.016 | 0.502 | 0.072 | -0.206 |

HSGPA - High school GPA
CGPA - College GPA
ACT1 - ACT taken at Freshman level
ACT2 - ACT taken at Sophomore level
ESS1 - Essay written at Freshman level
ESS2 - Essay written at Sophomore level
INT1 - First interview during admission (Freshman)
INT2 - Second interview into professional teacher education (Sophomore)
PTF - Portfolio